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Pixie Inspired Algorithm Explanation

Pixie is the algorithm that Pinterest uses to recommend boards and pins to users based on their own boards and pins. The idea is that it treats boards and pins as two sides of a partite graph, uses a random walk algorithm to bounce back and forth between the two sides, and much like a random surfer, uses the amount of times specific items get hit to recommend new items to users. Random walking is done by randomly selecting one of the available selections from an origin node, possibly with some weighting to favor some over others, and then changing the origin node to the new selection and repeating.

Using random walks helps, because close connections in the partite graph are presumably related, so they'll likely be relevant to the user. The random walking gives a convenient and fast way to see which close items are referenced more often, and such items are on average more likely to be reliably relevant, as opposed to just recommending some other random user's tastes. Average enough walks and you'll get a very good picture of a connection based view of item importance.

Obviously, Pinterest, the namer of the system, is one real-world use case for this. Other systems that have limited interaction make use of it as well, however, such as Youtube, and likely music recommenders like Spotify and Pandora.